

CENTRAL INTELLIGENCE AGENCY

COUNTRY Guatemala

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SUBJECT Primary or National Roads

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(LISTED BELOW)

25X1

THIS IS UNEVALUATED INFORMATION

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1. With the exception of the four-lane autobahn between Kaunas-Vilnius-Minsk (USSR), the primary road system consists of two-lane military arteries of transportation.
2. Most primary roads are constructed from comparable Soviet specifications. The standard width of pavement is 8 to 10m with an over-all width, including the shoulders, of 12.5 to 14.5m. The right-of-way averages 25 meters. A third lane, for what is termed a "Summer Road", is provided by stabilizing one shoulder. This is usually performed by compacting the shoulder with gravel. Light traffic and/or horsedrawn vehicles use this lane without restricting the motor vehicle traffic operating on the hard-surfaced pavement. [See Enclosure (A)]⁷
3. After the subsoil has been graded, rolled, and prepared in accordance with the typical section, an 18cm layer of sand is normally spread, forming a sub-base. When the subsoil is clay, a Telford base of approximately 12 to 15cm in thickness is built or an extra thick layer of sand (27cm) is applied.
4. The normal thickness of the pavement is 35cm and consists of two layers, the 18cm of sand plus the 17cm of broken or crushed stone. However, if poor subsoil conditions exist and the 27cm of sand is installed, the total thickness of the stone course (17cm) and the sand base (27cm) will be 44 cm. Accordingly, the thickness of the pavement may vary between 35 and 44cm.
5. The stone course is usually a waterbound macadam pavement and is given a surface treatment of bitumen, tar, or may have a pre-mixed (amiesite) bituminous surface course. If a "hot" method treatment is applied to this waterbound road, it is penetrated by using pressure distributors. These distributors have a tank capacity of 1,000 liters.
6. Rolling is performed with a wood-burning steam roller of 10-15 ton capacity. A two man crew operates the roller and for one roller a day's work is considered the equivalent of 50 cubic meters of crushed stone or chips.

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Drainage

7. Longitudinal drains are constructed beneath the sub-base and on a line inside the edge of pavement. No tile is used for drainage and the trench is filled with gravel. In addition to these longitudinal drains, shoulder drains are constructed connecting the longitudinal drains with the open parallel ditches located beyond the shoulder if a typical cut section exists or if drainage is required for the right-of-way area. These shoulder drains are systematically built oblique to the center line of the road and installed in a fishbone or stagger system. The gravel filled drains are appropriately graded at the bottom of the trench allowing the water to flow freely from the longitudinal drains to the open ditches. These parallel open ditches (one on the outside of each roadway shoulder) are constructed with a 1.0 to 1.5 slope with approximately a 0.5m width at the bottom of the ditch.
8. When the subsoil is sandy the shoulder drains are approximately 5m apart. If the subsoil is clay, the drains are constructed about 15m apart.

Traffic

9. Around Kaunas, the highways have a 12m width of roadway surface. All of the two-lane roads in this area were designed for a future third hard-surface lane of pavement. In some instances, "Belgian block" has been used as a surface course. This type of pavement exists where heavy drayage is to be found.
10. In general, all traffic will be halted in the spring due to the thawing action and frost coming out of the ground. In an emergency, an effort is made to open the roads for traffic, even if only for light traffic, through the use of a cover or mats made from the branches of trees. These mats will reinforce the weakened pavement or help to span the "frost boils" or "heaves" which normally occur.

Secondary Roads (County and/or Municipal)

11. The second class roads have a two-lane roadway surface totaling 7-9m in width. The pavement construction is the same as for the primary (first class) roads except that these roads lack the bituminous or tar surface treatment. In reality, they correspond to a waterbound macadam road.

Shoulders

12. On second class roads, the shoulder width will vary from one to two meters if the soil encountered is silty or if wet subsoil conditions exist.
13. The elevation of slope of the outer edge of the shoulder paralleling the edge of the pavement is normally 0.5m below the edge of the pavement.

Materials

14. Gravel is abundantly available. Stone for crushing purposes can be found within a range of 5-8 km of almost any highway. In general, granite, syenite, porphyry, and dolomite will be found as an outcrop in open fields or 4 to 5m below the surface. Bitumen, asphalt, and tar emulsions are import products. For waterbound macadam, a coefficient of 1.2 is normally used for compacting crushed stone.

Equipment

15. Stone crushers are in abundance and are estimated at 50 cubic meters capacity for the average day. An example of their limited capacity is 31 crusher days for producing one kilometer of crushed stone for a new military highway.
16. Rollers are scarce and mostly of the old steam type (10-15 tons) and wood is used for fuel. The grates were designed accordingly. In terms of steam rollers, the source estimates the use of 21 steam roller days with a two man crew operating each roller, for one kilometer of a new military highway. Such obsolete equipment is unknown to the US; however, this is the type existing in Lithuania.

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Recuperability

17. As previously stated, for large construction projects the foreign contractors brought their own equipment. This included modern steam or air hammers, concrete mixers, cranes, etc. Crushers and medium size mixers are available, but few, if any, large central plants exist as known to the industry in the US.
18. It has been estimated that one kilometer of road could be built within the following time and labor estimates:
 - a. A bituminous, pressure-applied, penetrated macadam road for a new project, using manual spreading operations and crushed stone supplied from a quarry, one km per week.
 - b. A surface treatment and/or repair project (the usual spring post-thaw or frost period) - 5km per week. This estimate was based upon the employment of 200 women per day for patching and hand spreading of both chips and bitumen or tar.
 - c. With strictly no equipment, for crushing and spreading: the 1,000 persons were required for constructing one kilometer every two days. If trucks and crusher were used, 300 persons could construct one kilometer per day.

Highway Traffic

19. The traffic on the primary or national system consists of approximately 50 per cent horsedrawn vehicles and 50 per cent motor transport. The trucks haul such commodities as cattle, grain, wood, and miscellaneous cargo.
20. On the secondary system the traffic is largely (80 per cent) horsedrawn vehicles with the remaining 20 per cent consisting of motor vehicles. The commodities are largely local products being transported to the centers of population or to the primary roads.

[See Enclosure B]Military Supply Routes

21. I can designate the respective national or primary roads in relation to their priority and importance as used by armies during former campaigns, the order of design and potential usage in and around the capital city of Kaunas.

(a) Kaunas - Vilnius-Minsk (USSR)

This is a four-lane autobahn-type of highway leading from Kaunas to Minsk. It was constructed with a pre-mixed bituminous surface course on a water-bound macadam base.

(b) Kaunas-Mariampole-Kalvarija-Suwalki (Poland)

This was the principal supply route used by the Soviets.

(c) Kaunas-Rasajinia-Rietavas-Klaipeda (Memel)

This route was the main artery for supplies used by the Germans for approaching the Baltic.

(d) Kaunas-Rumsiskes-Jeznas-Alytus-Ratnyciai-Grodno (USSR)

(e) Kaunas-Ukmerge-Utena-Daugzvpils-Dvinsk (Latvia)

(f) Kaunas-Sovetsk-Siauliai-Jelgava (Latvia)-Riga (Latvia)

(g) Kaunas-Babtai-Kedainiai-Ramygala-Panevezys.

[See Enclosure C]

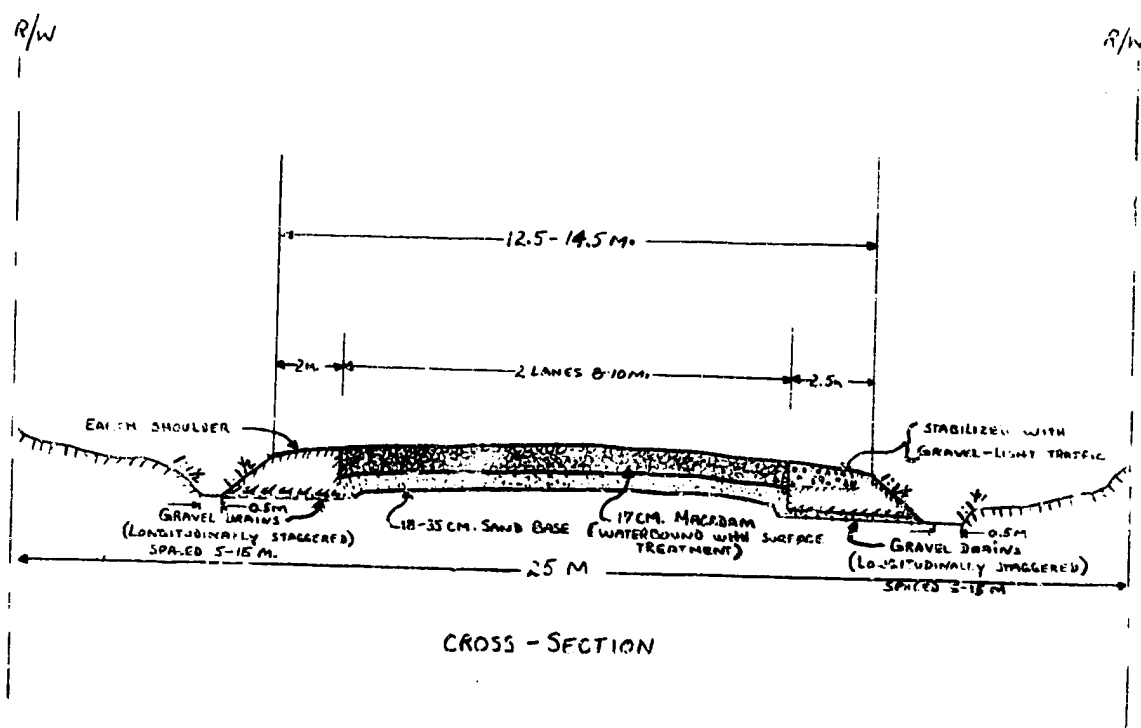
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ENCLOSURE (A)

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TYPICAL PRIMARY ROAD (SOVIET TYPE)



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